

WE CLAIM:

1. An oscillator, comprising:
a first phase shift circuit including a first pole;
a second phase shift circuit including a second pole, and having an input coupled to an output of said first phase shift circuit; and
a third phase shift circuit including a third pole, and having an input coupled to an output of said second phase shift circuit, wherein an output of said third phase shift circuit is cross-coupled to an input of said first phase shift circuit,
wherein at least one of said first, second and third poles includes a varactor to generate a phase shift according to said at least one of said first, second and third poles.
2. The oscillator of claim 1, wherein said at least one of said first, second or third poles generates said phase shift, said phase shift comprising approximately $1/3$ of a cross-coupled phase shift.
3. The oscillator of claim 1, wherein the varactor comprises an n-channel metal oxide semiconductor.
4. The oscillator of claim 3, wherein the varactor comprises the n-channel metal oxide semiconductor in an Nwell configuration.

5. The oscillator of claim 1, wherein the varactor comprises a capacitance to the at least one of said first, second or third poles.
6. The oscillator of claim 5, wherein the capacitance allows a frequency to be tuned.
7. A ring oscillator having three stages, the ring oscillator comprising:
 - a phase shift circuit to tune a frequency of an output signal; and
 - a pole within the phase shift circuit, wherein the pole includes a varactor to provide a capacitance for the pole.
8. The ring oscillator of claim 7, further comprising a first stage and a final stage, wherein an output of the final stage is cross-coupled to an input of the first stage.
9. The ring oscillator of claim 8, wherein the final stage comprises the phase shift circuit.
10. The ring oscillator of claim 7, wherein the pole comprises a resistance.
11. The ring oscillator of claim 1, wherein the varactor comprises

an n-channel metal oxide semiconductor.

12. The ring oscillator of claim 11, wherein the varactor comprises the n-channel metal oxide semiconductor in an Nwell configuration.

13. A circuit for providing a signal, the circuit comprising:
a voltage supply;
an oscillator including at least two phase shift circuits, wherein a final phase shift circuit is cross-coupled to a first phase shift circuit;
a diode coupled to the voltage supply and the final phase shift circuit of the at least two phase shift circuits; and
a varactor within a pole of the final phase shift circuit, wherein the varactor tunes a frequency of a signal generated by the oscillator.

14. The circuit of claim 13, wherein the varactor comprises an n-channel metal oxide semiconductor.

15. The circuit of claim 14, wherein the varactor comprises the n-channel metal oxide semiconductor in a Nwell configuration.

16. A method for generating an output signal in a ring oscillator, the method comprising:

applying a voltage control signal to a pole within a phase shift

circuit;

generating an output signal having a frequency according to the pole; and

generating a phase shift in the phase shift circuit according to the pole.

17. The method of claim 16, further comprising receiving the voltage control signal at the phase shift circuit.

18. The method of claim 16, further comprising using a feedback signal to determine the frequency of the output signal.

19. The method of claim 18, further comprising adjusting the pole according to feedback signal.

20. The method of claim 16, further comprising applying the voltage control signal to another phase shift circuit.

21. The method of claim 20, wherein the applying step comprises applying the voltage control signal to another pole in another phase shift circuit.

22. A circuit for generating an output signal, the circuit comprising:

applying means for applying a voltage control signal to a pole within a phase shift circuit;

first generating means for generating an output signal having a frequency according to the pole; and

second generating means for generating a phase shift in the phase shift circuit according to the pole.